

**REMARKS**

Claims 1-13 are pending in the present application. Claims 5-7 and 10-13 are withdrawn from consideration. Claim 4 is amended herein. Support for the amendment is based on original claim 1.

**Applicants' Response to the Objection to the Title:**

Objection to the title of the invention has been made on the basis that the title is not properly descriptive. In response thereto, applicants have amended the title to "Semiconductor Device" to accurately reflect the claimed invention. Wherefore, favorable reconsideration is respectfully requested.

**Applicants' Response to the Claim Rejection under 35 U.S.C. §103:**

Claims 1-4, 8 and 9 stand rejected under 35 U.S.C. §103(a) as being unpatentable over **Yamazaku et al.** (U.S. Patent No. 6,348,368) in view of **Torii et al.** (U.S. Patent No. 6,432,767). In response thereto applicants respectfully submit the following remarks.

In regard to claims 1 and 4, the Office Action asserts that **Yamazaki et al.** discloses a stress application layer. Specifically, the Action references 402 of **Yamazaki et al.** which appears in Fig. 4. This figure illustrates the third embodiment of **Yamazaki et al.** which is described at column 16, line 49 to column 17, line 36. This disclosure teaches a crystallized glass utilized as a substrate 401 and an insulating silicon film 402 functioning as a protective film for the crystallized glass substrate. This silicon film is preferably a silicon nitride oxide film. The Office Action cites **Torii et al.**, only for its disclosure of utilizing ferroelectric film in a capacitor dielectric. The Action maintains that there is motivation to combine the references

because it would be obvious to one of skill in the art that the combination “reduce[s] the thickness of the capacitor dielectric and increase[s] capacitance of the capacitor.” See page 3 of the Office Action.

Applicants respectfully traverse. In order for claims to be *prima facie* obvious within the meaning of 35 U.S.C. §103(a), each and every element (limitation) of the claims must be set forth in the cited art. Additionally, there must be a teaching or motivation to suggest the combination.

Applicants respectfully submit that **Yamazaki et al.** does not teach or suggest a stress application layer which actively applies tensile or compressive stress to the capacitor by deforming the substrate. This is a required limitation of claim 1.

As described at column 16, lines 60-62 of **Yamazaki et al.**, the insulating silicon film 402 is formed to encase the substrate 401 to protect it. As illustrated in Fig. 4 of **Yamazaki et al.**, semiconductor devices (CMOS devices described in Figs. 1-3 of the reference) are formed on top of the insulating silicon film 402. Additionally, **Yamazaki et al.** specifically teaches that any stress caused between the substrate 401 and the insulating silicon film 402 “cancels” because the insulating silicon film 402 is to be placed at least on the front and back surfaces of the substrate. See column 17, lines 23-27 (“...the stress of the silicon nitride film [402] at the back of the substrate cancels the stress at the front, so that warps or the like of the substrate do not occur.”)

**Yamazaki et al.**’s teaching for the insulating silicon film 402 is directly contrary to Applicants’ teaching for a stress application layer as claimed. In the current invention, the stress-application film 138 is applied to only a single side of the substrate 101. As a result, “...a

thermal stress occurs on the back surface of the substrate 101 according to the difference in the coefficient of thermal expansion between the stress-application film 138 and the Si substrate 101.” See page 21, lines 12-15. “Accordingly, the thermal stress on the back surface of the substrate 101 causes the tensile or compressive stress to be applied to the ferroelectric film 15 (or 113) of the ferroelectric capacitor 10 through the substrate 101.” See page 21, lines 21-24 of the current application.

Therefore, the protective film 402 of **Yamazaki *et al.*** does not actively apply tensile or compressive stress to the capacitor by deforming the substrate. This limitation of applicants’ claims is not taught in the cited prior art and the claims are therefore not obvious.

There is no teaching or motivation provided in either **Yamazaki *et al.*** or **Torii *et al.*** which would lead one skilled in the art to apply the protective film 402 of **Yamazaki *et al.*** to only one side of the substrate. **Yamazaki *et al.*** as detailed above, teaches away from causing stress to the substrate and therefore the capacitor elements.

In light of the above, applicants respectfully submit that the current invention is not obvious within the meaning of 35 U.S.C. §103(a) on the basis that not all the limitations of the claimed invention are present in the cited references and at least one of the cited references specifically teaches away from the present invention.

Application No. 10/716,878  
Attorney Docket No. 032122

Amendment under 37 C.F.R. §1.111  
Amendment filed: December 14, 2005

In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

**WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP**

A handwritten signature in black ink, reading "Michael J. Caridi", with a large checkmark-like flourish at the end.

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